

***SURFACE MODIFICATION USING AN ATMOSPHERIC
PRESSURE GLOW DISCHARGE PLASMA SOURCE***

ABSTRACT

- 5 A method for producing stable atmospheric pressure glow discharge plasmas
using RF excitation and the use of said plasmas for modifying the surface layer of
materials. The plasma generated by this process and its surface modification capability
depend on the type of gases used and their chemical reactivity. These plasmas can be
used for a variety of applications, including etching of organic material from the surface
10 layer of inorganic substrates, as an environmentally benign alternative to industrial
cleaning operations which currently employ solvents and degreasers, as a method of
stripping paint from surfaces, for the surface modification of composites prior to
adhesive bonding operations, for use as a localized etcher of electronic boards and
assemblies and in microelectronic fabrication, and for the sterilization of tools used in
15 medical applications.

4. A method of operating an atmospheric pressure plasma chamber comprising the steps of:

coupling an r.f. power supply through a coaxial transmission line to a suitably designed tuning network;

5 coupling a gas manifold to the plasma chamber; and then increasing the r.f. power to produce a plasma in an oxygen mixture gas; exposing glass to the plasma thereby cleaning off organic residue from the glass.

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